

The tail frisk around when the comet passes the sun that we can assume only that the tail is continuously formed anew, a new tail every day but every second.

The old material that had formed the tail yesterday is left behind in space. As a result of this continuous action of matter comets must of necessity be continuously growing smaller; nevertheless, we have records of Halley's comet for more than two thousand years and it continues to shine apparently with undiminished lustre. Indeed the wonders of the heavens are marvellous!

But what force repels the tail? When electricity and magnetism came to be studied it was found that examples of electromagnetic repulsion were common, so it was assumed that there was some electrical force in the sun covering the repulsion of the tail. But what was the nature of this force?

Electromagnetism is a very general term. Arhenius, the Swedish astronomer, has shown that the modern theory of light, first propounded by the celebrated Clerk Maxwell, brings as a necessary consequence that the sun's light exerts a pressure on all matter on which it falls. If the particles of matter are large in size their weight is many times the pressure of sunlight; but if the particles are decreased the pressure becomes greater and greater with respect to the weight, and it is only necessary to have particles small enough to have them repelled from the sun instead of attracted to it, due to gravity.

Indeed, on these assumptions an artificial comet was made in the laboratory by Professors Nichols and Hull at Dartmouth University. Consequently we believe that the particles forming the tail of a comet are extremely minute and that they are repelled by the pressure due to the sun's light. So we come to have an idea of what a comet is like.

The nucleus of a comet consists of a loose conglomeration of matter, like rocks, with large interspaces. While this matter is at a long distance from

came within 20,000 miles of each other. That was sufficient to scare the world, for was not the head of the comet enormous?

One little point in the calculation did not sink into the popular mind, and it was a very vital point too, for these calculations showed that the earth would reach this critical point in its path at least a month before the comet did. The calculations of the astronomers regarding Halley's comet do not admit of error. The earth comes closest to the comet on the evening of May 18, when it still will be 14,000,000 miles between us and the comet's head. Fourteen million miles between us and danger is rather a wide margin!

To speculate on what would happen if the comet hit the earth is idle. It would indeed jar our old earth considerably, for the comet would be a projectile of thousands of tons, flying a hundred times as fast as the swiftest moving shell from a modern twelve inch gun.

Still though we will not bump into the head of the comet, we will pass through the tail and the head will sweep across the face of the sun. There will be unusual happenings and all astronomers will be on the alert to see what takes place.

The comets of 1819 and 1861 both crossed the face of the sun, but no one was really sure that anything unusual had taken place. On May 18 next about 11 P. M. the comet will enroach on the western edge of the sun and pass across its disc almost through the centre, taking about an hour altogether to make the transit.

In New York city it will be impossible to see any of this phenomenon, for the sun will have set below the horizon hours before. Observers from the islands of the Pacific Ocean will have a rare chance to study this, but it is altogether likely that nothing much of an unusual nature will be seen.

But it is possible that the passage through the tail will prove interesting. Some writers have foretold the danger that we will be in when this happens, for does not the spectroscopic tell that cyanogen gas is in the comet's tail in large quantities, and is not cyanogen the principal component of prussic acid, one of

CLEVELAND'S SUNRISE COURT

POLICE PLAN THAT REDUCES ARRESTS FOUR-FIFTHS.

Chief Kohler's Policy Tried for Three Years—Other Cities Have Adopted It—A Talking to Instead of Prison the Penalty for Certain Minor Offenses.

In January, February and March, 1907, there were 7,138 arrests in Cleveland. In the same months in 1908 there were 1,283, or less than one-fifth the number in 1907. The difference is due to the methods of Fred Kohler, chief of police.

Kohler has been on the Cleveland police force for more than twenty years, beginning as a patrolman. He is a strict disciplinarian. His policies have spread to Evansville, Ind.; Harrisburg, Pa.; Lansing, Mich.; Birmingham, Ala., and are in use in Toledo.

It was late in 1907 that Kohler asked for a conference with Mayor Johnson and his administration officers and laid his plan before them. Peter Witt was one of the city officials who listened to it. Witt had been a labor agitator and orator before he was elected City Treasurer and had come in conflict with Kohler more than once. He in particular listened with surprise to Kohler's statement.

Kohler pointed out that of the 30,000 persons arrested in Cleveland in 1907 80 per cent. were discharged in court. Six thousand only were held for punishment. Twenty-four thousand went free, either because they had done nothing to warrant arrest or because there was no evidence enough to hold them. Kohler set forth why he considered this 80 per cent. of arrests an injury to the community. His reasons, as repeated to the writer, are as follows:

"In the first place I've watched arrests as a member of the police force for twenty years. They increase steadily in proportion to the increase in population every year. That seems to indicate that they do not decrease crime.

"Next, all arrests of persons discharged in court cause actual harm. A very large proportion of all arrests are for intoxication. Now a man who does not drink may keep sober after he has been dragged into police court and discharged, but the first thing a drinking man will do is to walk straight out and get drunk again.

"Of course if a man is a habitual drunkard there's nothing to do but send him to the workhouse; but I'm in doubt whether that is a remedy. There is a man in Cleveland who has been sent to the workhouse in Cleveland a hundred times and he still drinks. There was a woman who before she died was sent there seventy times for the same cause. However, I'm not speaking now of that class, but of people who are not drunkards.

"Another extremely common result of an arrest is that the man loses his job. The story of his arrest gets around; he is absent from work a day or two; he perhaps gets drunk after he is discharged and the result is that he finds some one else in his place when he goes back. That's a heavy price for a man to pay for having been arrested on a charge on which he is not held by the court.

"Then there is the expense. There is the loss of time of the prisoner and witnesses from work. There is the expense for counsel, for which \$5 a piece is a very low average. That alone would make \$100,000 for the 20,000 who went free in this city in 1908 and who under the old regime would have been brought into court.

"The 10,083 persons who were brought into court by the police in 1908 cost the city \$52,000 in jury and witness fees. At that rate the new police save the city \$100,000 on the 20,000 that went free. There's \$200,000 that would have been paid out under the old regime without any benefit to society or any good to any one. On the contrary it would have harmed a good many of the prisoners, and would have caused distress, humiliation and disgrace to a large number of innocent persons.

"When we used to be arresting so many persons the police courts were crowded with cases and ran all day. Every morning from ten o'clock until five o'clock the doors were down, some with babies in their arms and three or four little kids hanging to their skirts. They would hang about all day, waiting for the case to be called, and then after all in 90 per cent. of the cases the man would be discharged, and all that distress and worry and humiliation there for nothing.

"The result of the conference was that Kohler tried his plan. As an example of the way in which the chief went to work let us take the case of a man who was arrested on a charge of carrying a dangerous weapon. The man was a newspaper man, as a citizen, to witness that he searched the man's clothes merely to find his address if possible. In the first formulation of the new police plan the man was taken to the station house and left to sleep.

At 10 o'clock in the morning he would have been awakened, told to tell his name and address, warned, admonished and sent home, having first signed a waiver in which he agreed not to sue the police for false arrest. If he refused to sign this and preferred to go into court the police would have taken him to the court. In the first formulation of the new police plan the man was taken to the station house and left to sleep.

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ished the better evidence it seems to the popular mind that it has a good police force and a good government.

"Sometimes it seems to me that the public has got the idea that the police exist not to prevent crime but to punish people; but if you can prevent crime without arresting people and sending them to jail as well or even better I don't see why it isn't just as well."

Kohler's plan of dealing with such problems as are offered by illegal resorts is in part to station a policeman in front of them to warn visitors away. As an example of this policy the chief has the name of having driven one druggist in Cleveland into bankruptcy.

He had a drug store in the heart of the business district opposite the leading hotel of the city. He was known to sell cocaine against the law. He was warned and continued. He was arrested, taken into court and fined. Still he sold.

Then a policeman was put at the door and kept there until the man was driven out of business, ruined. Not a person entered the store. He might have been arrested for damages, but he didn't. He had been persistently breaking the law. Kohler has been used for damages several times on account of the policeman at the door policy and has always won.

This method has now been followed for three years. There were 19,994 persons arrested for intoxication in 1907 and only 3,585 in 1908, and no more drunkenness is seen in Cleveland than anywhere else.

Another class of cases in which there was a great falling off in arrests included the young fellows who cause annoyance on street corners in the evening. They are not criminals; they are commonly youths of the type which thinks it amusing to be fresh.

The chief believes that to parade such a youth in court and give him a police record often starts him on a criminal career. Instead he has both the youth and his parents brought to his office, talks to them, warns them that arrest and disgrace will follow the next offense and sends them home. He says it is just as effective in protecting the public and harms the boys less.

"Nobody ever leaves a police court without feeling ugly toward the police and the city government," said the chief, "but they leave the sunrise court feeling grateful to the police. They know we might do a great deal worse to them. They know we could publicly disgrace them, perhaps cost them money or send them to jail. The state of mind with which a man quits an encounter with the police makes a difference in his after conduct, and that's particularly true with a boy who hasn't got good sense yet."

The arrests for assault and battery and for petit larceny were nearly the same in Cleveland in 1907 and 1908 and for felonies, as has been shown, they were more numerous the second year than the first. In these classes of cases the protection of life and property is involved.

This plan of managing the police has now been continued three years. Chief Kohler has named it the common sense policy. He holds that it is only common sense not to bring into court any person who is going to be discharged by the court, and he has tried to cultivate the judgment of his force up to the point where they will bring no person into court to be discharged.

In 1908 there were 66 per cent. fewer arrests in Cleveland than in 1907. In the first quarter of 1910 there were 82 per cent. fewer than in the same quarter of 1907. But he still has not got his force to the point of what he calls perfect judgment. For in March, 1910, out of 400 persons arrested in the city 175 were discharged by the police court. Chief Kohler pointed out this as simply 175 cases in which his force did not exercise proper judgment in bringing the persons into court. In his opinion a common sense police administration means the disposal without a court record of all cases which are not sure of fine or imprisonment by the court.

THE STREET CIRCUIS.

A One Man Band—The Ring a Carpet—Performance Short.

An open air circus in miniature that gives its performance on a carpet spread on the street pavement is the latest addition to New York's forms of cheap entertainment. It may be encountered almost any pleasant afternoon or evening somewhere in the thickly populated district east of the Bowery and Third Avenue and between the Brooklyn Bridge and the Harlem River.

The advent of this little circus is heralded by a burst of music. The band consists of a man with a bass drum. On his back are cylinders that clash explosively when he kicks out the heel that pulls the string connected with them. Fastened to a frame on his head is a concertina. Hanging beside the bass drum is a snare drum that he sets going by moving his unoccupied foot.

As the music goes on two or three performers are spreading a strip of ragged carpet in the street and the spectators are assembling. Within sixty seconds after the band has started to play every kind of a circus act is on the feet. The crowd is crowded. The sidewalk and the street itself about the performers are filled. Then the mountebanks throw out their own specialties of the feat. In all their shabby spangles and wrinkled tight.

The first part of the show is generally a one man circus, an acrobatic feat. Then there is a little tumbling and one of the performers juggles Indian clubs while the others juggle balls. The crowd is generally concludes with some feat of strength.

Two of the performers will mount on the shoulders of the other, one on the top of the pile will balance himself on his head while the band strives to convey musically the extent of his alarm and the crowd will cheer him on.

As the performance draws to a conclusion the band takes his hat in his disengaged hand and begins a round of the crowd, the crowd will cheer him on. As the performance draws to a conclusion the band takes his hat in his disengaged hand and begins a round of the crowd, the crowd will cheer him on.

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GRACE CHURCH OPEN AIR PULPIT.



On the south side of the recently constructed chapel of Grace Church, on the site formerly occupied by Fleischmann's restaurant, is an open air pulpit built against the wall. It is made of the same granite that was employed in the construction of the church. It is six feet high and decorated with chiseled figures illustrative of the Beatitudes, the first half of each verse of which is inscribed above and below the figures. The pulpit as well as the new chapel was designed by William W. Renwick, a New

York architect. It is entered by a bronze door from the chapel and has no canopy or covering of any sort to protect the preacher from sun or rain.

The pulpit faces a yard 50 by 100 feet, most of which is owned by Grace Church, there being a triangular strip bordering on Tenth street which is leased. This yard is to be soddied, leaving a cement walk parallel to the church on the north side. A hedge similar to that which surrounds the old yard north of the church is to be planted against the fence

PLAINTS OF FLAT DWELLERS.

NOISES AND DOGS THE CHIEF CAUSES OF TROUBLE.

Certain Noises Permitted by Law and Custom—Few Apartments Really Sound Proof—Two Good Rules for Tenants—Things Agents Can't Help.

A lack of knowledge of the rules governing apartment houses is the main cause of the dissatisfaction of many tenants and incidentally of the apprehensive look worn by renting agents in the spring. This year the apprehensive look has developed earlier than usual along with the warm weather. Open windows in March are bound to precipitate two questions that bother agents in general—dogs and noises, particularly noises.

In the days when flats were tenanted mostly by persons born and brought up in flats these questions were less troublesome. As soon as recruits to apartment house life began to include first handreds, then thousands of former dwellers in private houses and boarding houses the questions came to the front.

"You never told me there was a violin player in the next apartment who practiced every day two hours at a stretch," indignantly complained a tenant the other day as she dropped into the chair by the agent's desk.

"I didn't know it, madam," the agent returned. "The janitor knew it," the tenant continued. "When I told him that he must put a stop to it at once he said that you were the one to talk to about it."

"When does the man practise?" "Both morning and afternoon. Whenever I plan to take a nap after lunch he is sure to choose that time to begin."

Half an hour later it took half an hour to make it clear to the caller that unless the violin player practiced after 10:30 P. M. the agent did not intend to interfere with him—she went away declaring that she knew her husband would break his head.

There are some flat hunters," said another agent softly to the departing back of a trim middle aged woman who carried a long list of addresses of apartment houses in her hand, "who ought to live in the middle of a tea acre. That lady is one of them. She has moved three times in two years and expects to move again May 1 because the tenants overhead stay up late nights. She is hunting for an apartment of six rooms at \$50 or so a month."

"No, this lady is not from the country. She is a New Yorker, who lived quietly in a private house till her husband had business reverses. Knowing her tastes I asked why she did not rent rooms in a private house, and she answered because it was easier to keep her in a modern flat."

"So it is. Nevertheless it is foolish for any one who wants absolute quiet to rent rooms in the average apartment house, and if women in general were better informed respecting the laws governing tenants in apartment houses many, I am sure, would not buy furniture and set up housekeeping in a flat and agents and janitors would have an easier time."

"In the flats which do not draw the line at many children there are fewer complaints about noise than in the apartments where children are barred and rents are higher, probably because on the whole they quiet down earlier at night and also because most of the tenants have become used to the sort of noises. It is from the apartments renting at from

\$25 to \$50 a month that most of the kicks about noise come, and most of these kicks have to do with night noises."

"The majority of persons who rent apartments know that the tenement house law prohibits tenants from making sleep destroying noises between the hours of 10:30 P. M. and 8 A. M. and this is variously construed. For instance, one of my apartments is rented to two sisters, one a school teacher, who foots most of the bills. The other stays at home and keeps house and spends her spare time running here to complain that the tenant above walks around his apartment all night, keeping her awake, although the teacher is not disturbed by it."

"Another tenant burst in one day to demand that I take immediate steps to stop the tenants above from making so much noise when they came home at midnight or later, which happened nearly every night. She too quoted the tenement house law. I learned that it took the disturbers from half to three-quarters of an hour to get to bed, after which everything was serene, and then I tried to show her that in a case like this the most an agent could do would be to hint that the disturbers put down thicker rugs or try to move more quietly in the small hours of the night."

"Yes, I did give the hint, but as the tenant below still continued to complain I don't believe it did much good."

"Card parties are always a fruitful source of complaint unless it happens that two or three tenants of similar tastes have apartments adjoining or below and above one another. Although the game may be fairly quiet the breaking up is generally lively enough to disturb somebody who looks at the clock and finds it past midnight. Many tenants play cards five nights in the week, while others never play at all, which doesn't add to the agent's happiness."

"When, as sometimes happens, a tenant persists night after night in destroying the beauty sleep of neighbors the Board of Health if it can be induced, to come to the rescue is our trump card. By sending an inspector in plain clothes to camp in the hall and keep his ears open he can be secured at once, and the agent's demand that the apartment be vacated is bound to be respected."

"In flats rented by the month without a lease two or three general covenants are given by giving a month's notice to an unpopular tenant and firing him. Where there is a lease it is different, and it is noises which do not come under the Board of Health category as a menace to health which give agents the most trouble."

The other day I refused to renew a man's lease because the tenant underneath him had complained of his child's romping. Otherwise he was a very desirable tenant. He was the complaining parent who paid \$10 a month rent. Neither wanted to move. I compromised by telling the father of the boy that he could remain on condition that his floors were covered with heavy filling and carpets laid over that. This he agreed to do. He calls his neighbors below cranks, and his neighbors, a childless couple, think he is a most unreasonable man."

"In another case I have very reluctantly refused to renew the lease of a five year tenant who has three children, all born in the apartment, because of complaints from other tenants. As a matter of fact children are barred from this particular apartment house, but because these youngsters arrived after their parents moved in they have been allowed to remain; but I can't afford to lose two or three other good tenants on their account, so they must stay out."

"Musical instruments and vocalists are among the surprises handed out to tenants new to the apartment style of living. Only yesterday a woman came in boasting with indignation to tell about her neighbors, who played the piano and a banjo and also practised singing whenever the notion took them, which was often, ex-

cept of course late at night. She admitted they did not keep it up after 11 P. M.

"Of course you did not know that they were so musical or you would not have rented them the apartment," she suggested.

"Madam," I pointed out, "there is no clause in your lease prohibiting them from playing and singing. Why do you suppose it is against the rules to do these things?"

"Do you mean to tell me," she almost gasped, "that you don't inquire how many musical instruments prospective tenants have and how much they practice?"

"That is exactly what I do mean," I told her. "The only questions I ask prospective tenants are, 'Do you have any children or dogs?' and 'What is your occupation?' and 'What is your financial responsibility, and these have to be put very diplomatically. Were I to try to pry into how a tenant spends his leisure I should be told practically to go to thunder.'"

"This is my first experience in an apartment house," she said when leaving, "and I must say that I am disappointed."

"There is no way then of guaranteeing a fairly quiet apartment to particular people?" the agent was asked.

"Yes; or partly so. For instance, when a responsible person arrives here to do business with me and makes it clear that he has serious objections to noise, I have to talk with the janitor of the building to which I am sending him and ask about the tenants in apartments 10C and 10E, and such as are below and above apartment 10D, which is for rent. If the janitor answers that they are pretty lively I don't send my client there. I try elsewhere."

"Particular persons who have had experience often make inquiries on their own account, and this is the wisest thing to do. The janitor knows whether there are children or pianos above, below or in the adjoining apartment, although he may keep mum as to how much or how little of a nuisance they are."

"In the case of the most of the most appearing women have looked me in the eye when I asked if they had a dog, and have told me no, and perhaps the first time I went to the building after they moved in I would meet these same women carrying toy dogs. Then they explain: 'Why, I thought you meant a large dog that would run in the hall; they all say, 'Beesie is such a mite, and I never let her out of my arms when going in or out. Of course you don't object to her, do you?' and I also decide to wink at this breach of the rules."

"This shows that it's a lot easier for an agent to ask questions than to get honest answers. I have found that the most reliable source of information is the janitor. I have found that the most reliable source of information is the janitor. I have found that the most reliable source of information is the janitor."

"The nearest approach to sound proof apartments are of the class which rent for from \$4,000 to \$5,000 and are a year old. None of the apartments on my list which rent from \$150 a month down is anything like sound proof. A tenant who I want to also accept for the year, a so-called sound proof building came in to tell me that she could hear through the wall on occasion what her next neighbor said."

"No, the person who wants to live in perfect quiet had better not try living in a flat. I have a few rules which I always ask for persons to inspect for the sound proof apartments. I have a few rules which I always ask for persons to inspect for the sound proof apartments. I have a few rules which I always ask for persons to inspect for the sound proof apartments."

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PROF. BARNARD'S CAMERA—THE BRUCE TELESCOPE.

the sun it is inactive and there is no tail. As it comes nearer and nearer our central luminary the heat of the sun starts actions, gases are formed and a tail is thrown off, at first slowly, and then with greater and greater activity as the sun is approached.

The tail grows in length and has its maximum extent in miles when the comet is at perihelion. The comet's tail is curved, depending on the relative velocities of the matter leaving the head and of the comet in its orbit, and the curvature as a result is always away from the direction in which the comet is moving.

THE COMET THROUGH A TELESCOPE. If most people are of the opinion that if they could only see through a great telescope they would see marvels that are impossible to see with the naked eye. If such a wish were granted and an opportunity were given the reader of this to look through the largest telescope in the world, the Yerkes glass, which is shown in the illustration, it is safe to predict such a person looking through this big telescope for the first time would be terribly disappointed.

These unfamiliar with a telescope imagine that it would be possible to see the whole comet at once, very much magnified and shining with a brilliant light. Such an idea is utterly wrong. With a great telescope you could see only a very small portion of the comet at one time, highly magnified it is true, but the beginner would not be able to appreciate what he would see, and as a result would be skeptical as to what a highly trained eye could discern. Indeed the comet would present a far prettier picture in May to the naked eye than it will in any telescope, big or small.

Photographs of a comet are not taken with a long telescope, but with a comparatively short instrument. In order to make the telescope or camera as sensitive as possible it is necessary to have the ratio of aperture to focal length as great as can be made. The exquisite photographs of Prof. Barnard, the most skillful